

Amendments to the Claims

The following listing of claims will replace all prior versions of claims in the application.

1. (currently amended) A method of producing $\text{Li}_y[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{O}_2$ wherein $0.025 \leq x \leq 0.45$, $0.025 \leq x < 0.35$, and $0.9 \leq y \leq 1.3$, the method comprising:
 - mixing $[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{OH}_2$ with LiOH or Li_2CO_3 and one or both of alkali metal fluorides and a boron compound compounds as sintering agent to form a resulting mixture; and
 - heating the resulting mixture until a sufficiently dense composition of $\text{Li}_y[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{O}_2$ having a pellet density of at least 3.3 g/cm^3 is obtained for use in a lithium-ion battery,
 - wherein the total amount of boron compound(s) is greater than 0.2% of the total weight of the mixture.
2. (currently amended) The method of claim 1 wherein the resulting mixture is heated to at least about 900°C .
3. (currently amended) The method of claim 1 wherein the resulting mixture is heated for at least about 3 hours.
4. (currently amended) The method of claim 1 wherein the resulting mixture is heated for at least about 6 hours.
5. (original) The method of claim 1 wherein the amount of sintering agent being mixed is about 0.1 to about 5.0 weight percent of the resulting mixture.
6. (original) The method of claim 1 wherein the amount of sintering agent being mixed is in the range of about 0.2 to about 3.0 weight percent of the resulting mixture.

7. (original) The method of claim 5 wherein the resulting mixture is heated for about 3 hours.
8. (original) The method of claim 1 wherein the amount of sintering agent being mixed is less than about 10 weight percent of the resulting mixture.
9. (currently amended) The method of claim 1 characterized by the resulting densified composition exhibiting a reversible volumetric energy of at least ~~about~~ [1833 - 333x] measured in Wh/L, wherein ~~0.025 ≤ x ≤ 0.45~~ 0.025 ≤ x < 0.35.
10. (currently amended) The method of claim 1 wherein the pellet density of the resulting densified composition is at least ~~about~~ 72 percent of theoretical density.
11. (cancelled)
12. (original) The method of claim 1 wherein said sintering agent is an alkali metal fluoride.
13. (original) The method of claim 12 wherein said sintering agent is LiF.
14. (original) The method of claim 1 wherein said sintering agent is a compound of boron.
15. (original) The method of claim 14 wherein said sintering agent is selected from the group consisting of boron oxide, boric acid, and lithium borates.
16. (withdrawn, currently amended) A lithium transition metal oxide composition produced by the method of claim 1 and exhibiting a ~~minimum~~ reversible volumetric energy

characterized by the formula of at least $[1833 - 333x]$ measured in Wh/L, wherein $0.025 \leq x \leq 0.45$.

17. (withdrawn, currently amended) A lithium transition metal oxide for use in a lithium-ion battery having the general formula of $\text{Li}_y[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{O}_2$ wherein $0.025 \leq x \leq 0.45$, $0.025 \leq x < 0.35$, and $0.9 \leq y \leq 1.3$, and exhibiting a minimum reversible volumetric energy characterized by the formula $[1833 - 333x]$ measured in Wh/L.

18. (withdrawn, currently amended) The lithium transition metal oxide of claim 16 exhibiting a pellet density of at least ~~about~~ 72% of theoretical density.

19. (withdrawn, currently amended) The lithium transition metal oxide of claim 17 exhibiting a pellet density of at least ~~about~~ 72% of theoretical density.

20. (withdrawn, currently amended) The lithium transition metal oxide of claim 19 that is formed into a lithium ion battery electrode having a reversible volumetric energy in the range of ~~about~~ 1500 to ~~about~~ 2200 Wh/L.

21. (new) A method of producing $\text{Li}_y[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{O}_2$ wherein $0.025 \leq x \leq 0.45$, and $0.9 \leq y \leq 1.3$, the method comprising:

mixing $[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{OH}_2$ with LiOH or Li_2CO_3 and at least one alkali metal fluoride to form a resulting mixture; and

heating the resulting mixture until a composition of $\text{Li}_y[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{O}_2$ having a pellet density from about 3.3 g/cm^3 to about 4.0 g/cm^3 is obtained for use in a lithium-ion battery, wherein the total amount of alkali fluorides is greater than 0.2% of the total weight of the mixture.

22. (new) A lithium transition metal oxide composition produced by the method of claim 21 and exhibiting a minimum reversible volumetric energy characterized by the formula $[1833 - 333x]$ measured in Wh/L, wherein $0.025 \leq x \leq 0.45$.